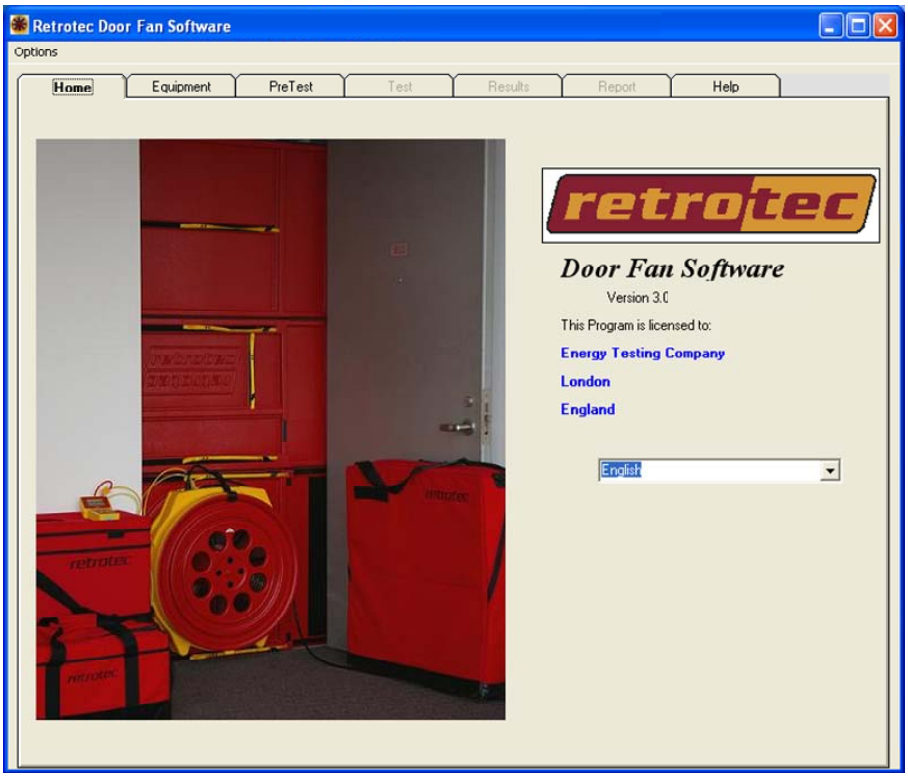
Door Fan 3.0
Software User's Manual



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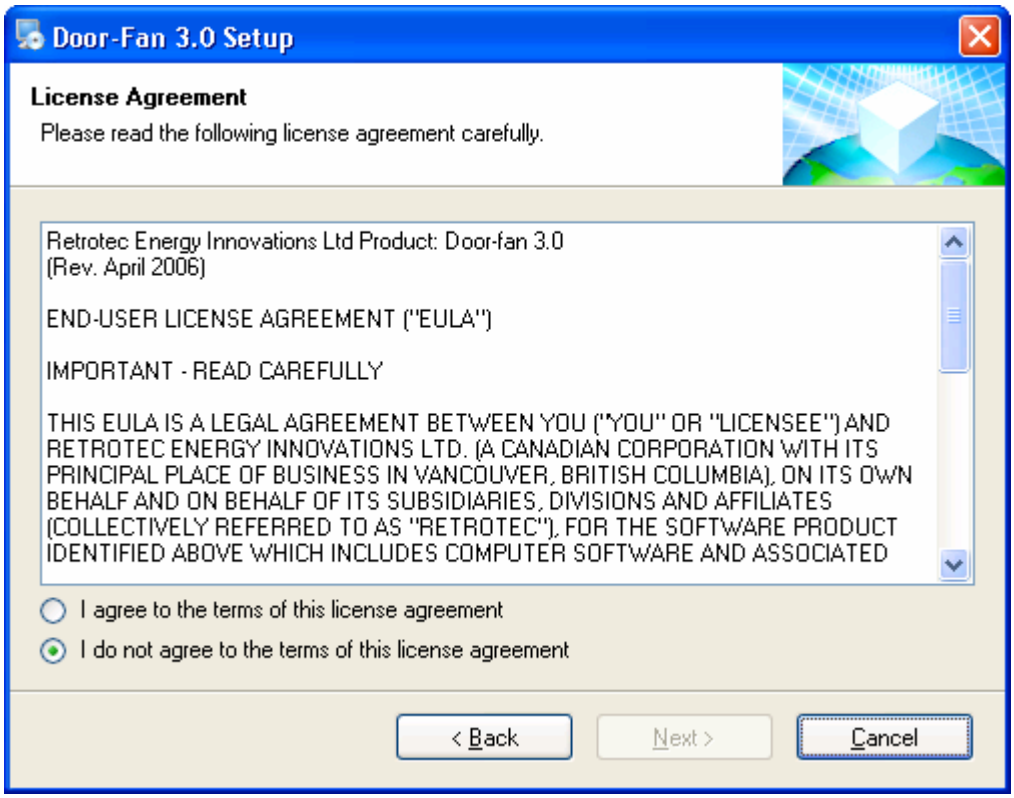
1 Software Installation

It is recommended that you use Windows XP with Service pack 2 installed.

Door Fan 3.0 is constantly under development and new features are being continuously added. Released versions of the software can be downloaded from our website at http://www.retrotec.com/products/software/door_fan_30

Download the latest version and run the executable file. You must accept the license agreement before you can install the software.


Door-Fan 3.0 Setup
License Agreement
Please read the following license agreement carefully.
Retrotec Energy Innovations Ltd Product: Door-fan 3.0
(Rev. April 2006)
END-USER LICENSE AGREEMENT ("EULA")
IMPORTANT - READ CAREFULLY
THIS EULA IS A LEGAL AGREEMENT BETWEEN YOU ("YOU" OR "LICENSEE") AND RETROTEC ENERGY INNOVATIONS LTD. (A CANADIAN CORPORATION WITH ITS PRINCIPAL PLACE OF BUSINESS IN VANCOUVER, BRITISH COLUMBIA), ON ITS OWN BEHALF AND ON BEHALF OF ITS SUBSIDIARIES, DIVISIONS AND AFFILIATES (COLLECTIVELY REFERRED TO AS "RETROTEC"), FOR THE SOFTWARE PRODUCT IDENTIFIED ABOVE WHICH INCLUDES COMPUTER SOFTWARE AND ASSOCIATED
I agree to the terms of this license agreement
I do not agree to the terms of this license agreement
< Back
Next >
Cancel

Once the software is installed you can access it by going to Start -> Programs -> Retrotec Programs -> *Door Fan 3.0* or you can use the Desktop Icon if you chose to create one on your desktop.

2 Using a DM-2A with Door Fan 3.0

Door Fan 3.0 can be used stand alone or can be completely integrated with your fan system by using a Retrotec DM-2A Digital Gauge.

Note: The following procedure must be repeated for every USB port on your computer.

2.1 Installing the DM-2A Drivers on Your USB Ports

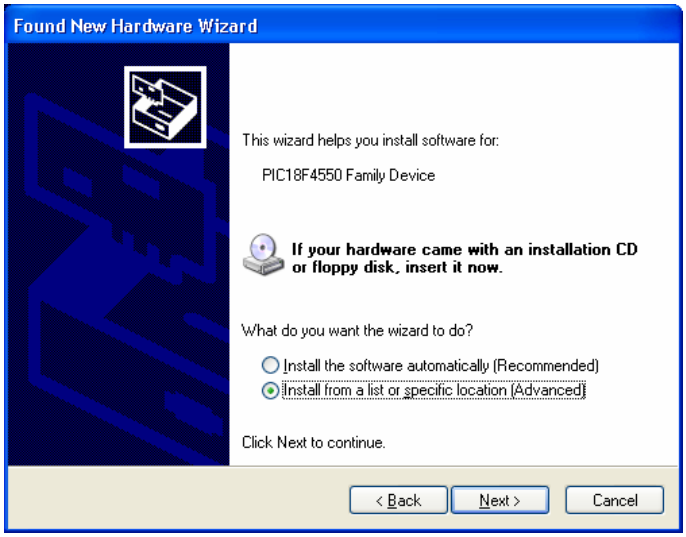
Connect your DM-2A to your PC using a standard USB Cable. The following window should appear.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Select "No, not this time" and press [Next >] to proceed with manual identification of the location of the DM-2 drivers

2.2 Identifying where the DM-2 Drivers are Located

Windows does not know where the DM-2 drivers are located. You must remind Windows where the drivers are located for each USB port.


Found New Hardware Wizard
This wizard helps you install software for:
PIC18F4550 Family Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

During the software installation, the DM-2 drivers are copied into the USB sub-folder in the folder in which you installed the Door Fan 3.0 software.

By default this location is C:\Program Files\Retrotec\DM2 Drivers\USB\

If presented with the option, decline the automatic installation and instead, choose to install from a specific location.

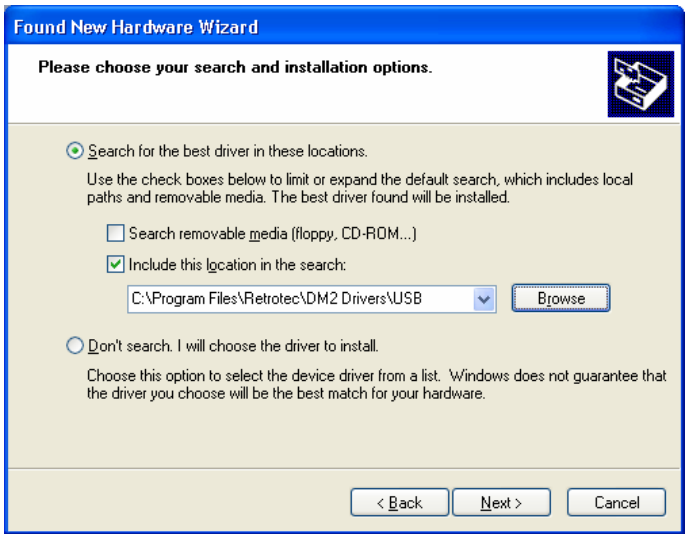
Press [Next >] to proceed.

When asked where to search for the drivers, select to only search in the provided folder, and then [Browse] to the USB sub-folder of the folder in which you installed Door Fan 3.0

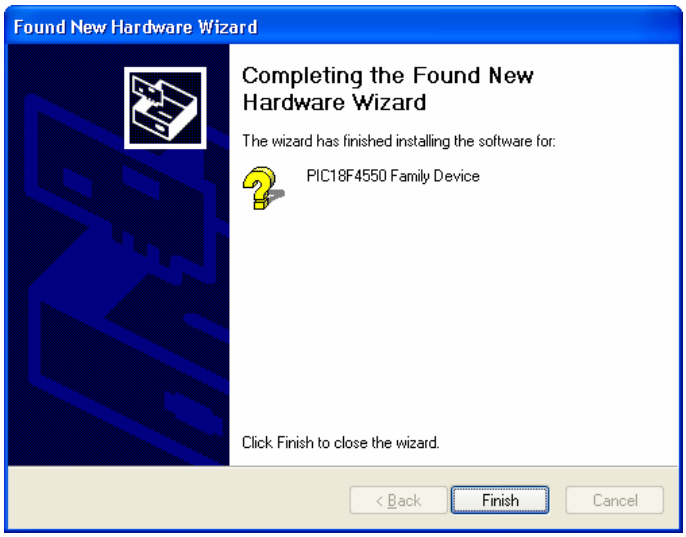
This would typically be

C:\Program Files\Retrotec\DM2 Drivers\USB\

Press [Next >] to proceed.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\Program Files\Retrotec\DM2 Drivers\USB
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

2.3 Completing the DM-2 Driver Installation



If Windows successfully finds and installs the DM-2 driver, this message box will appear.

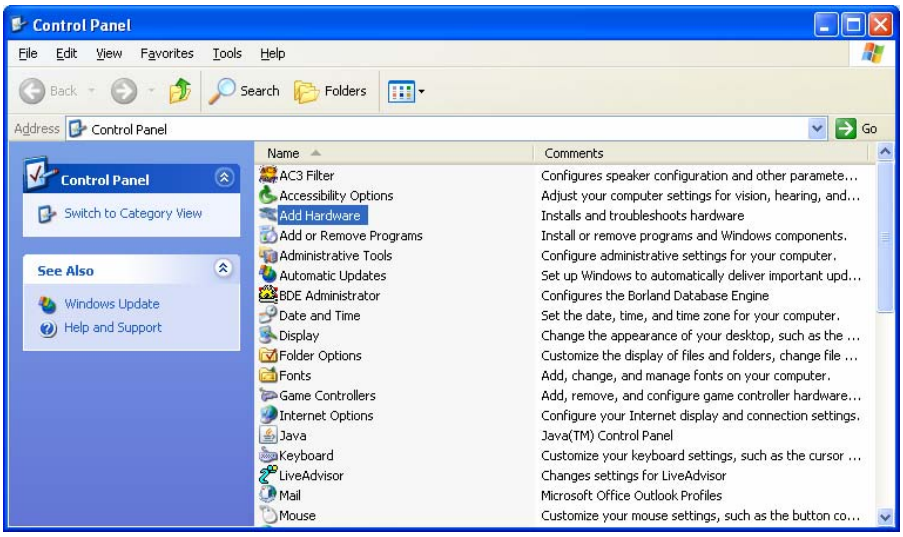
Once the installation has completed, press [Next] to finish the installation

Once you have located the drivers and installed them, you will be ready to use Door Fan 3.0 in conjunction with your DM-2A Digital Gauge.

Note: You must complete this procedure for each USB port on your computer.

2.4 If you are still having problems

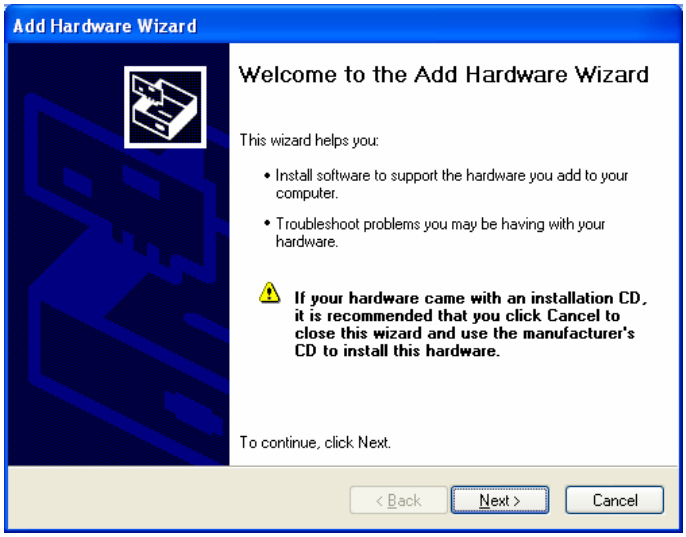
If you are having problems getting the DM-2 driver installed, then try the following procedure.



Select the Start button

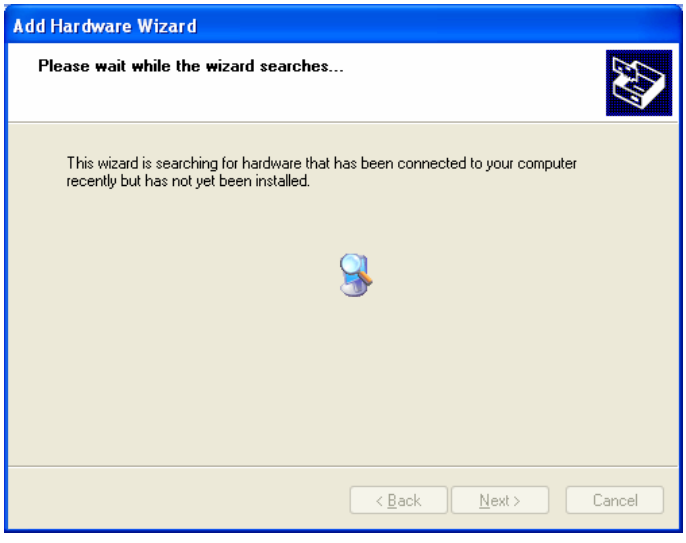
Select Control Panel from the start menu

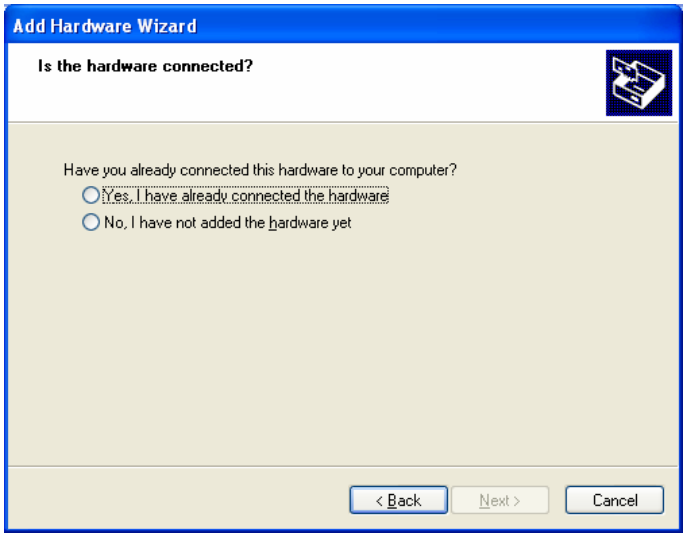
Select “Add Hardware”
The Add Hardware Wizard will appear


Add Hardware Wizard
Welcome to the Add Hardware Wizard
This wizard helps you:
• Install software to support the hardware you add to your computer.
• Troubleshoot problems you may be having with your hardware.
If your hardware came with an installation CD, it is recommended that you click Cancel to close this wizard and use the manufacturer's CD to install this hardware.
To continue, click Next.
< Back
Next >
Cancel

Select the [Next >] button to proceed to the next screen

Windows will search for uninstalled, but connected hardware.


Add Hardware Wizard
Please wait while the wizard searches...
This wizard is searching for hardware that has been connected to your computer recently but has not yet been installed.
< Back
Next >
Cancel


Add Hardware Wizard
Is the hardware connected?
Have you already connected this hardware to your computer?
Yes, I have already connected the hardware
No, I have not added the hardware yet
< Back
Next >
Cancel

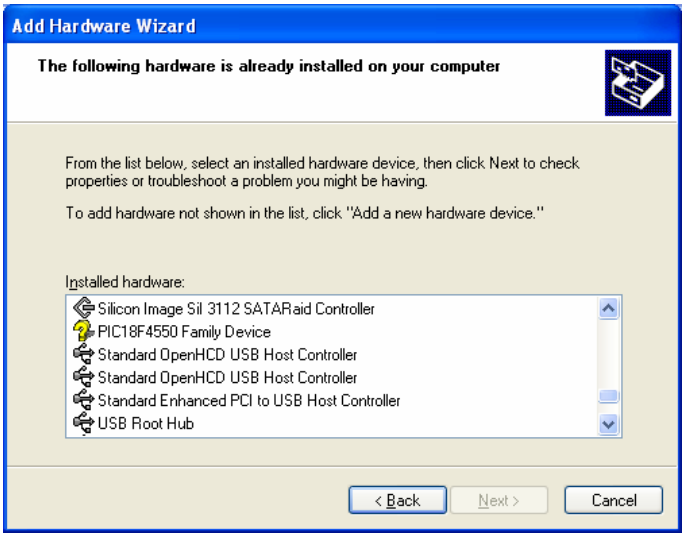
If Windows cannot find any new hardware, it will ask that you confirm that the hardware is connected to the computer.

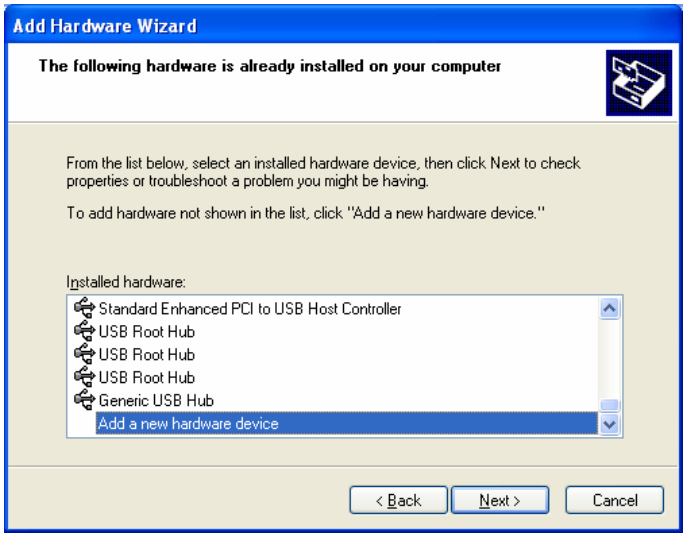
Ensure the USB cable is connected to the computer and the USB cable is connected to the DM-2.

Select “Yes, I have already connected the hardware”, and select [Next >] to proceed.

From the list that is displayed, scroll down.

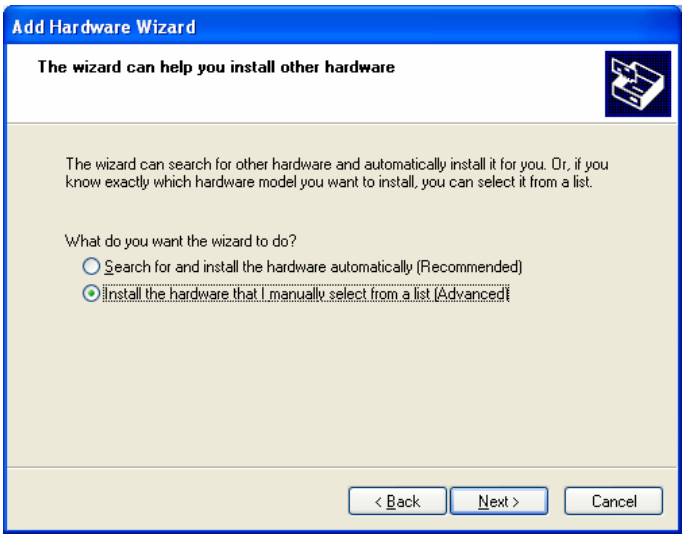
If PIC18F4550 Family Device is displayed, you should call Retrotec and discuss the issue further.

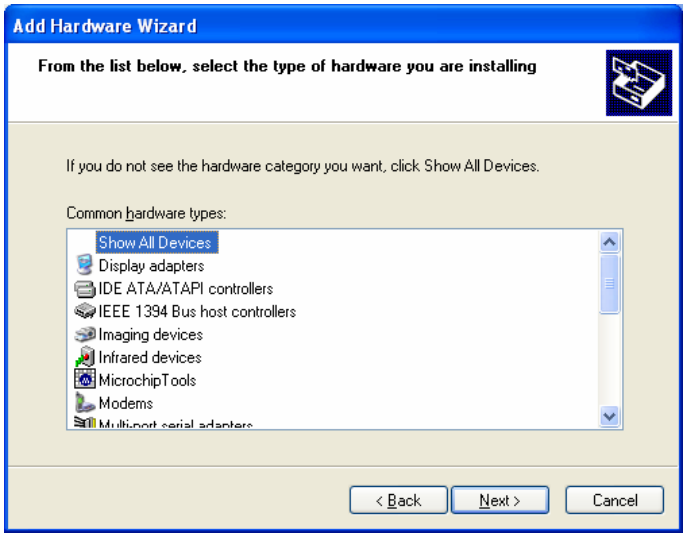

Add Hardware Wizard
The following hardware is already installed on your computer
From the list below, select an installed hardware device, then click Next to check properties or troubleshoot a problem you might be having.
To add hardware not shown in the list, click "Add a new hardware device."
Installed hardware:
Silicon Image Sil 3112 SATARaid Controller
PIC18F4550 Family Device
Standard OpenHCD USB Host Controller
Standard OpenHCD USB Host Controller
Standard Enhanced PCI to USB Host Controller
USB Root Hub
< Back
Next >
Cancel


Add Hardware Wizard
The following hardware is already installed on your computer
From the list below, select an installed hardware device, then click Next to check properties or troubleshoot a problem you might be having.
To add hardware not shown in the list, click "Add a new hardware device."
Installed hardware:
Standard Enhanced PCI to USB Host Controller
USB Root Hub
USB Root Hub
USB Root Hub
Generic USB Hub
Add a new hardware device
< Back
Next >
Cancel

Otherwise, scroll down to the bottom of the list and select “Add a new hardware device” and select [Next >]

Select “Install the hardware that I manually select from a list (Advanced)”

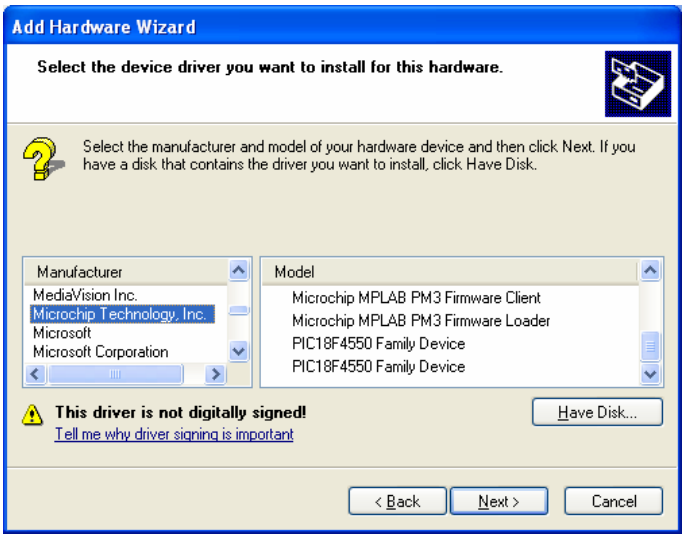

Add Hardware Wizard
The wizard can help you install other hardware
The wizard can search for other hardware and automatically install it for you. Or, if you know exactly which hardware model you want to install, you can select it from a list.
What do you want the wizard to do?
Search for and install the hardware automatically (Recommended)
Install the hardware that I manually select from a list (Advanced)
< Back
Next >
Cancel


Add Hardware Wizard
From the list below, select the type of hardware you are installing
If you do not see the hardware category you want, click Show All Devices.
Common hardware types:
Show All Devices
Display adapters
IDE ATA/ATAPI controllers
IEEE 1394 Bus host controllers
Imaging devices
Infrared devices
MicrochipTools
Modems
< Back
Next >
Cancel

Select “Show All Devices” and hit [Next >]

Scroll down to Microchip Technology Inc and select PIC18F4550 Family Device and select [Have Disk…] or simply select [Have Disk…]

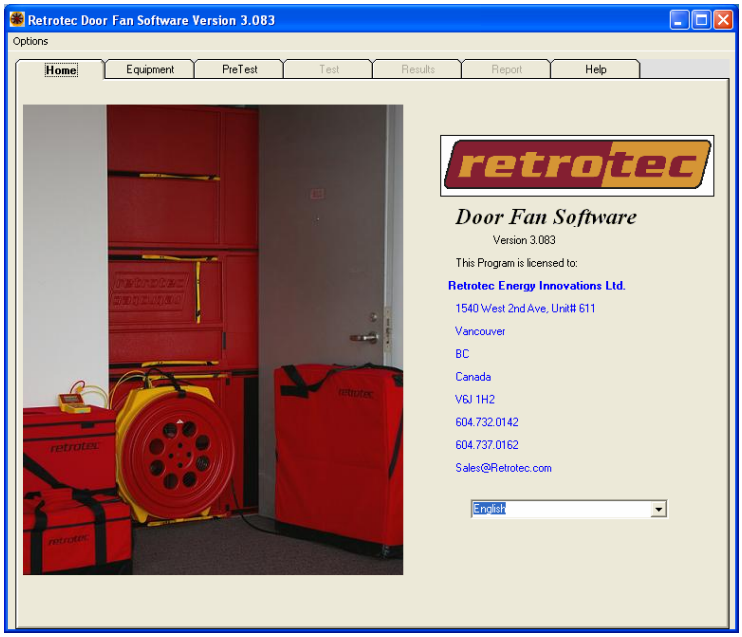
Navigate to C:\Program Files\Retrotec\DM2 Drivers\Usb and select the mchpusb.inf file


Add Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Manufacturer
MediaVision Inc.
Microchip Technology, Inc.
Microsoft
Microsoft Corporation
Model
Microchip MPLAB PM3 Firmware Client
Microchip MPLAB PM3 Firmware Loader
PIC18F4550 Family Device
PIC18F4550 Family Device
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

3 Licenses, Certificates and Equipment

The downloadable software is a demonstration version with a 30-day demo software license.

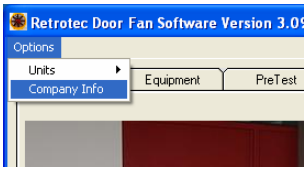
In order to completely license the software and install your specific door fan hardware into the software, a Software Certificate must be installed. This Software certificate contains your license information and the calibration information for your door fan and gauge hardware.



3.1 Editing Your Company Information

When you install the demo version of Door Fan 3.0, the company name is set to "Unlicensed Company" by default. When you import your Software Certificate, your company name will be configured into the software automatically.

All other company information (Address, Phone Numbers, etc) can be modified through the Options menu in the top right of the screen.



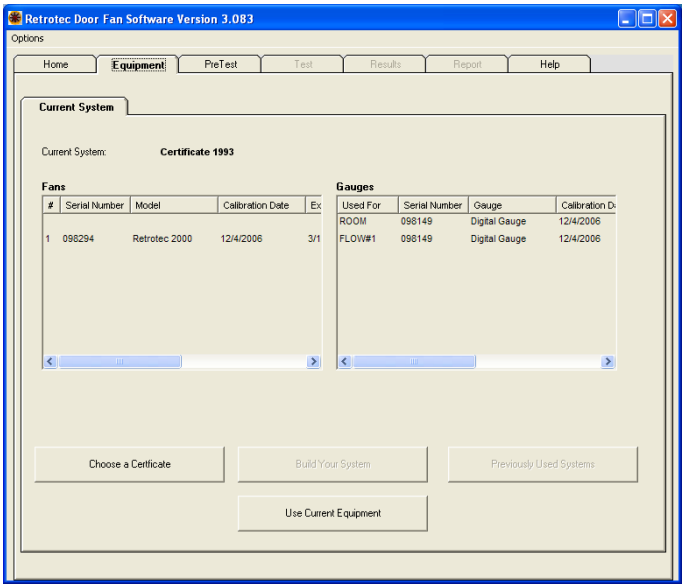
Selecting Options: Company Info will open up up a window and allow you to edit all of the information with the exception of the Company Name.

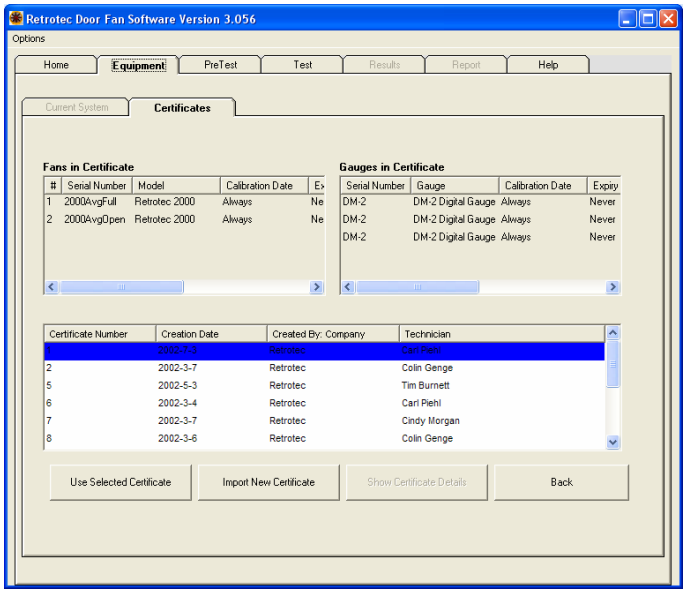
The Company Name can only be modified by importing a certificate.

3.2 Importing your Certificate

The software license comes in the form of an encoded .txt file, either on a floppy disk or via E-mail when the software is purchased.

From the Equipment tab click [Choose a Certificate]

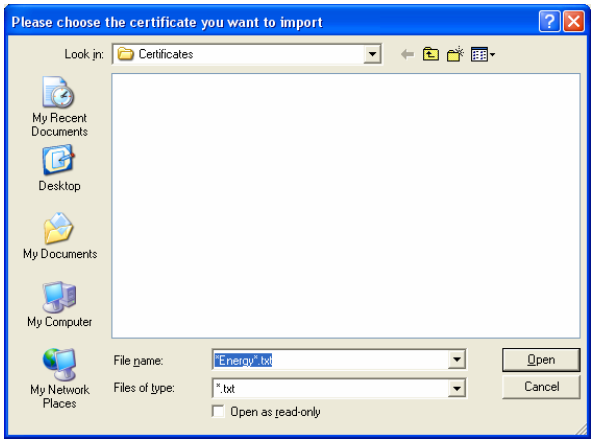




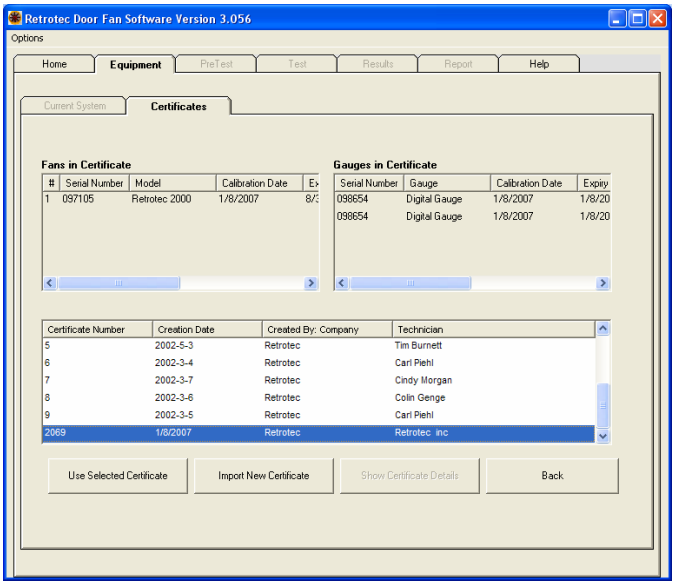
Next, select [Import New Certificate]. If you received a disk from Retrotec containing your license insert it now and select the .txt file on the disk.

If you received the license via email; save the attachment to a location of your choice on your hard drive

The following screen will prompt you to browse for the .txt file. Once located, highlight the .txt file and click [Open]



3.3 Using your Software Certificate



Once your certificate has been successfully imported, it will appear on the certificates page, on the list of all available certificates.

You are now ready to use the equipment provided on your certificate.

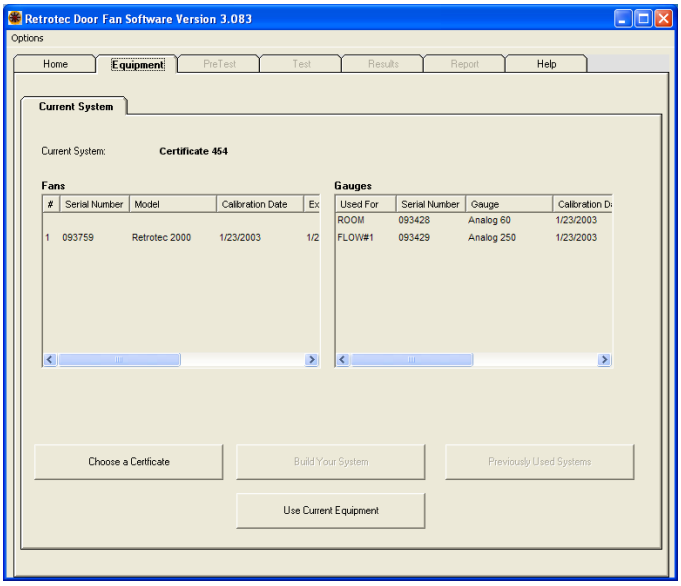
Use the Mouse, Keyboard and Scroll Bar to navigate through the list to your certificate.

Click on your certificate and then click [Use Selected Certificate].

This will return you to the Current System tab.

3.4 Viewing Your Current System

The Current System tab shows you the details of the equipment that will be used for all new tests. It shows you the fans and gauges in your system and shows you which gauges are to be used for which measurements.



For example in the picture to the right, Certificate 454 has been selected.

It shows that the system is composed of one Retrotec 2000 series fan with serial # 093759, one 60 Pa analog gauge with serial # 093428 and one 250 Pa analog gauge with serial # 093429.

It also shows that 093428, the 60 Pa analog gauge, is to be used for room pressure measurements and that 093429, the 250 Pa analog gauge is to be used for measuring flow pressure from Fan #1 in your system.

Note: You must ALWAYS select the [Use Current Equipment] button if you change Certificates.

4 PreTest Building setup

The next step in performing a test will take you to the PreTest Tab. From this tab you will set up your Group / Customer, Building and Zone. If you choose, you may also change your equipment from this tab. To do so, select [Change Equipment].

4.1 Group/Customer Setup

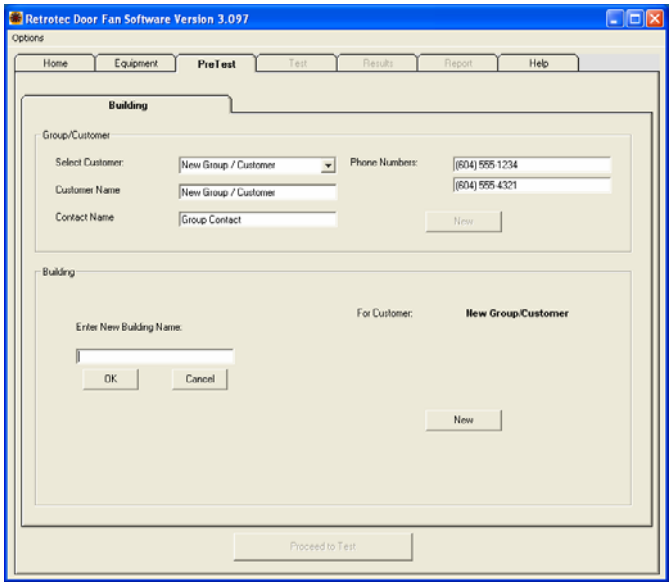
Start by selecting the [New] button, name your Group / Customer and select [OK].

*Only the Group / Customer Name is required to continue, but it is recommended that all information be entered for reporting purposes.

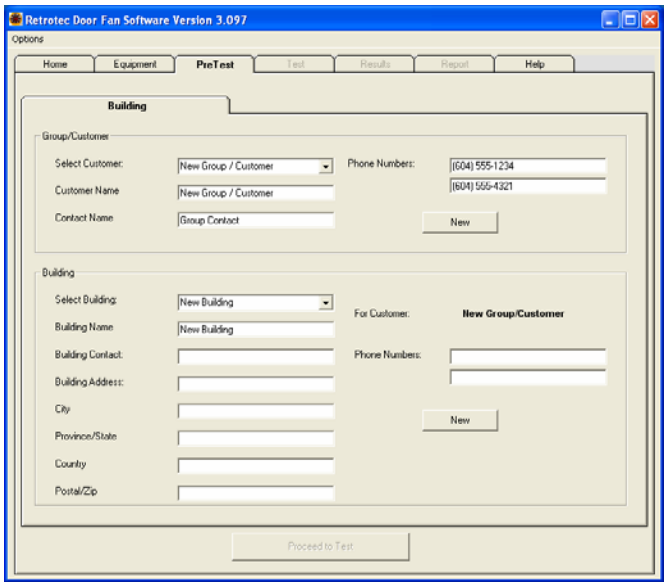
Enter the Contact information for your Group / Customer.

Existing Group / Customers are available from the drop down menu.

Now you can move onto setting up your Building



4.2 Building Setup



Just as you did above, enter your building name and the contact information.

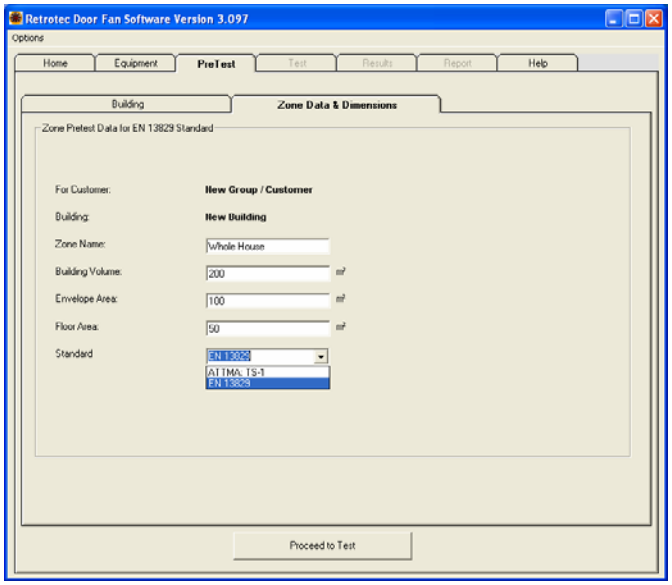
*Only the building name is required to continue, but we suggest completing all the contact information for your reporting purposes.

Existing Buildings are available from the drop down menu.

4.3 Zone Setup

A Zone can be a single room, or a series of rooms. For example, you may be testing the second floor of a house; therefore your zone would be “Second Floor”

First, Name your zone, then enter the Volume, envelope area and Floor Area.



Volume is used to calculate the Air Changes per Hour result.

Envelope Area is used to calculate the Permeability result.

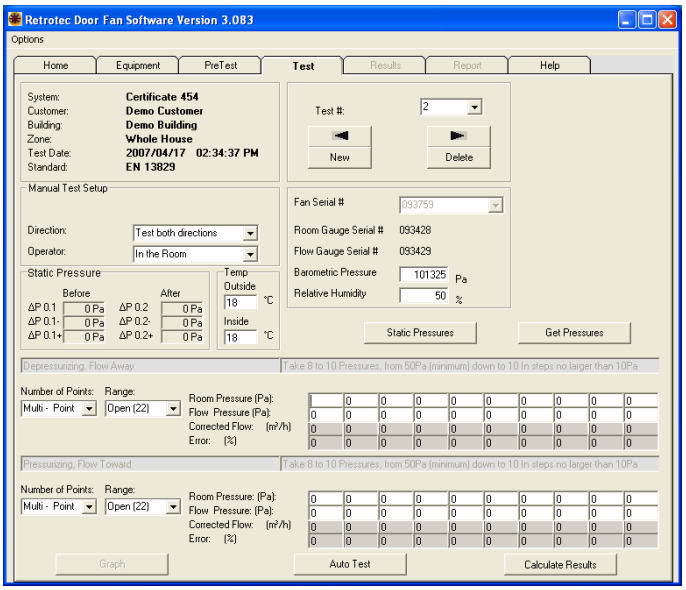
Floor Area is used to calculate the Specific Leakage Area result.

Next select your standard. You can choose either EN13829 or ATTMA: TS-1

Once you have completed the Zone setup, Select [Proceed to Test]

5 Conducting a Manual Test

There are 2 ways to perform a test with Door Fan 3.0, Manual Test and Auto Test. You may conduct any number of tests on a particular building and *Door Fan 3.0* will keep track of each test. Saved tests are accessible by the drop down menu or by using the arrow keys. The test screen is where all of the information about the test conditions will be recorded. On the top left side of this screen you will see the details of your system. Before you begin, confirm that the system, customer and enclosure are correct.



The first set of information required by *Door Fan 3.0* is the Setup and Room conditions.

The user is guided though this required information by selecting from the pull-down menus and entering the static pressure and temperature information directly.

5.1 Direction

Using the pull-down menu, choose which direction(s) you plan to test. Normally both directions will be tested to eliminate errors in leakage area that can come from duct leakage, static pressures, stack effect or wind.

"Pressurizing" is when the fan is blowing into the enclosure.
"Depressurizing" is when the fan is blowing out of the enclosure.

Both EN13829 and ATTMA: TS-1 encourage testing in both directions.

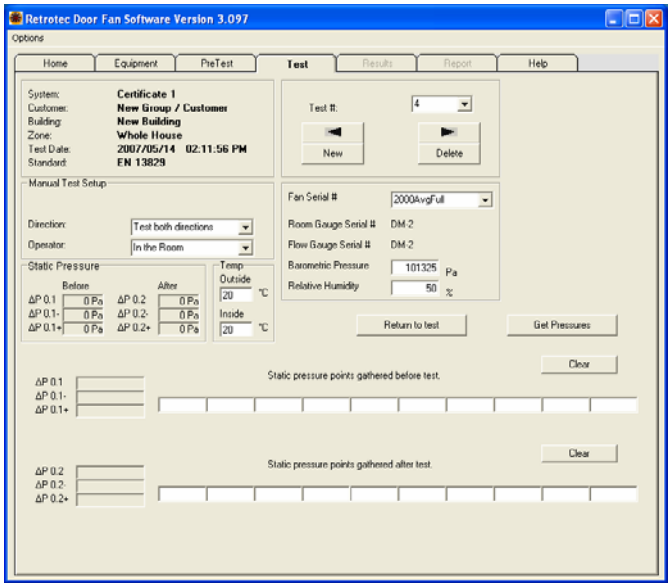
5.2 Operator

From the pull-down menu, select whether the operator is "in the room" or "out of the room" depending on where the operator is standing during the test. The red room pressure tube always goes through the door. When the operator is outside the room, the red room pressure pickup tube goes inside the room. When the operator is in the room, the red room pressure pickup tube goes outside the room.

Door Fan 3.0 automatically calculates the correct flow pressure by subtracting the room pressure from the flow pressure when fan flow is towards the operator.

5.3 Static Pressure

Both EN13829 and ATTMA: TS-1 require that static pressure be observed for at least 30 seconds and a number of average values must be calculated. On the Manual Test page, selecting the [Static Pressures] button takes you to a sub-page where up to 10 static pressure observations can be recorded. As observations are entered, Door Fan 3.0 will automatically calculate the averages.



If you are connected to a Retrotec DM-2 or DM-2A digital gauge, the [Get Pressure] button will retrieve each static pressure observation digitally from the gauge.

If you are using another gauge, observations must be keyed in manually.

5.4 Temperature

Enter an estimate here of the temperature both inside and outside of the enclosure. An estimate within 10ºF/5ºC is adequate.

5.5 Barometric Pressure

Enter an estimate here of the barometric pressure in Pa (note: standard barometric pressure at sea level is 101325Pa = 1013.25mBar).

5.6 Relative Humidity

Enter an estimate here of the Relative Humidity. If you are unsure, the software defaults to 50%.

5.7 Test Section

Following the Environmental Data section is the Test Results section. The section is broken up into two areas, “Flow Toward the Operator” and “Flow Away from the Operator”. One or both of these sections will be enabled depending on your selection in the “Direction” pull-down.

5.8 Number of Points

Door Fan 3.0 supports both single-point and multi-point tests. Whether a single or multi-point test is required is determined by the standard being tested to. Door Fan 3.0 defaults to these conditions automatically the first time it is started. These defaults can be modified by the user and will become the default the next time the software is started.

5.9 Range Selection

Select a range that is appropriate for the room or zone that you will be testing. The larger the leaks, the larger the range you will need to use. Currently only one range can be used for each direction of testing.

Ideally you should choose a range that allows the fan to run as close to top speed as possible and still allows you to achieve the correct pressure. That is, choose the smallest range ring that still allows you to reach your maximum pressure

If the speed of the fan is too low for accurate results, *Door Fan 3.0* will display a LOW error and you will have to switch to a smaller range (for the entire direction), or you will have to stop the test.

5.10 Room Pressure

This value is the static pressure difference between inside the enclosure and outside the enclosure while the door fan(s) is running. To take the measurement, one pressure probe is open at the gauge and the other is taken through the red tube, which is positioned on the other side of the doorway. Regardless whether the user is inside or outside the enclosure, the red tube is always on the side of the doorway opposite the operator.

Note: In a multi-point test, always begin with the highest pressure first, adjust your fan range ring accordingly, then work your way down in pressures until you reach the end of your test, or until the software displays that the flow is too low.

5.11 Flow Pressure

This value is the measure of the pressure difference across the inlet of the fan and is translated into flow by the computer (or it can be looked up in a table supplied by the door fan manufacturer). The certificate of calibration defines the exact relationship between room pressure, flow pressure and volumetric air flow. In general, the flow pressure must always be much greater than the room pressure. *Door Fan 3.0* will warn the operator when this flow pressure gets too low in which case; a more restrictive range is required.

Door Fan 3.0 supports the calculation of flow either from flow pressure alone, or, more accurately, from flow pressure and room pressure.

5.12 Corrected Flow

This value comes from the calibration curves on the certificate. First, gauge readings are corrected by Door Fan 3.0 (based on the gauge calibrations), then, flow is calculated using the flow formulae on the certificate. The resultant flow is then corrected for temperature or density according to the standard you are testing to.

5.13 Error %

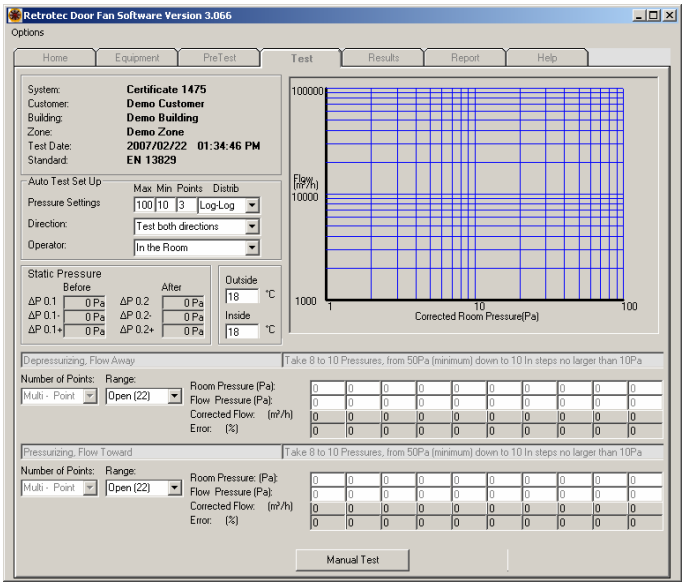
This value only applies to multipoint tests. The resultant value must be 6% or less for the test to be acceptable.

5.14 Calculate Results

Once you have entered the required room and flow pressures, you can calculate your results. When this button is selected, your results will be displayed on the "results" and "reports" tabs. Please see Chapter 7 Results or Chapter 8 Reports for additional information.

6 Conducting an Auto Test

To Use the Auto Test function of door Fan 3.0 you must have a DM-2A and it must be connected to your computers USB port. Follow steps 4.1 to 4.3 to setup your Group/Customer, Building and Zone Setup.



From the test tab, select the [Auto Test] button.

If the auto test button is unavailable, shut down Door Fan 3.0 and ensure that your DM2 is connected to your computer via the supplied USB cable and that the DM-2 drivers have been installed. Please see *2.1 to 2.3* for instructions on installing your DM-2 Driver.

6.1 Pressure Settings

Select the maximum and minimum pressures and how many points you would like to test. The maximum and minimum pressure and the number of points depends on the standard you are testing to.

Both EN13829 and ATTMA: TS-1 recommend testing up to 100Pa.

Choose the distribution method of the points, either Logarithmic or Linear.

Since Pressure and Flow are a logarithmic relationship, distributing the points logarithmically will produce consistent spacing and a more accurate representation of the leakage characteristics of the room.

Distributing the points linearly will more heavily weight the higher pressures over the lower pressures.

6.2 Direction

Using the pull-down menu, choose which direction(s) you plan to test. Normally both directions will be tested to eliminate errors in leakage area that can come from duct leakage, stack effect or wind.

6.3 Operator

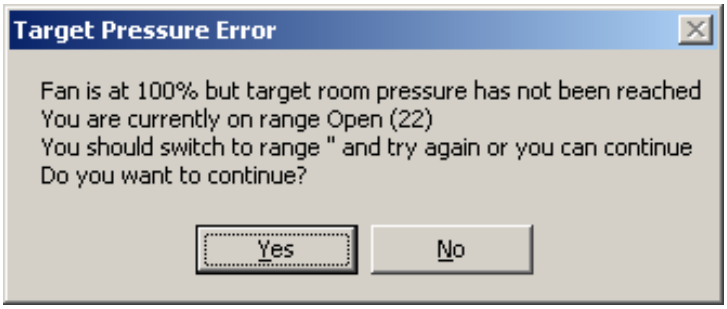
From the pull-down menu, select whether the operator is "in the room" or "out of the room" depending on where the operator is standing during the test. When the operator is outside the room, the red room pressure pickup tube goes inside the room.

6.4 Temperature

Enter an estimate here of the temperature both inside and outside of the enclosure. An estimate within 10ºF/5ºC is adequate

6.5 Range Selection

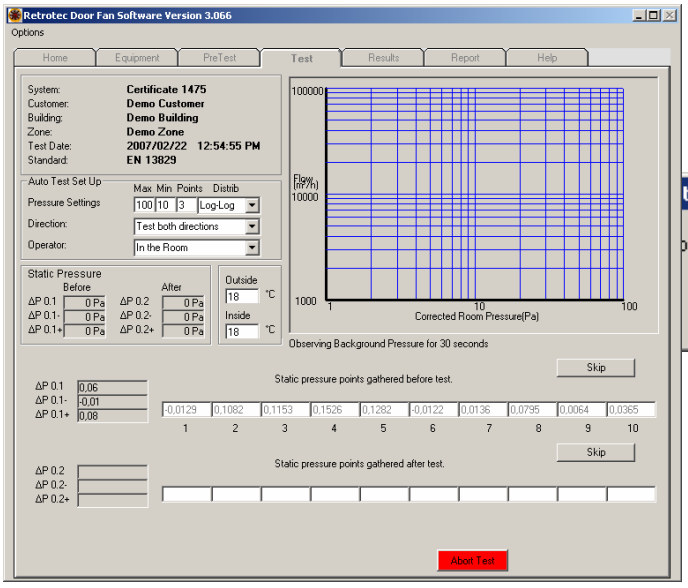
Before testing you will select a fan range on which to conduct your entire test. The room pressure must be within this specified range to be in conformance with the procedure. If you can't achieve this pressure, use a higher range, seal up the room or use more blowers. If the required pressure cannot be achieved *Door Fan 3.0* will display the following warning.


Target Pressure Error
Fan is at 100% but target room pressure has not been reached
You are currently on range Open (22)
You should switch to range " and try again or you can continue
Do you want to continue?
Yes
No

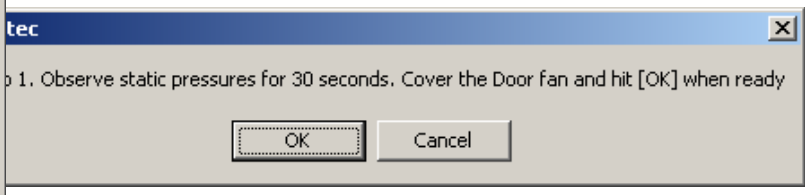
6.6 Starting the Auto Test

Once you have completed the above steps, you are ready to begin the auto test. To begin the auto test, select the {Start} button.

6.7 Auto Static Pressure



Unlike a manual test, Door Fan 3.0 will take your static pressure readings automatically.



Once you have selected {Start}, the following screen will appear. Cover your door fan and select {OK}

Door Fan 3.0 will now observe the static pressure for 30 seconds.

You can see the static pressure being updated every 3 seconds.

Once the static pressure readings are complete the following screen will prompt you to uncover your door fan. Once you have uncovered the fan select {OK}

6.8 Monitoring Auto Test

Although you may start auto test and simply walk away from your fan, it's recommended that you monitor the auto test process.

6.9 Completing Auto test

Once Auto Test is completed, Door fan 3.0 will take you back to the manual test Screen. Note that the information from auto test is now carried over to the manual test tab and is saved as any other test. You may now review the results from the results tab X.X and run reports from the Reports tab X.X.

7 Results

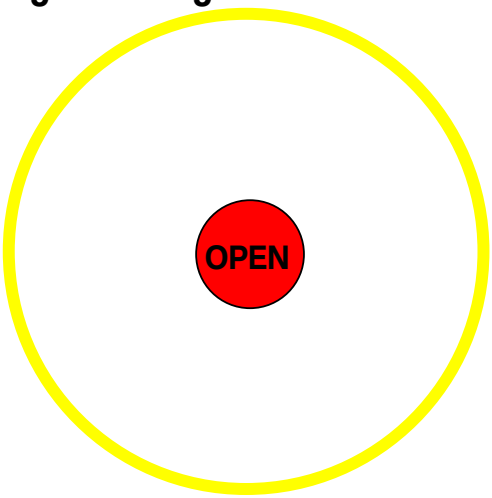
8 Reports

9 Range Selection

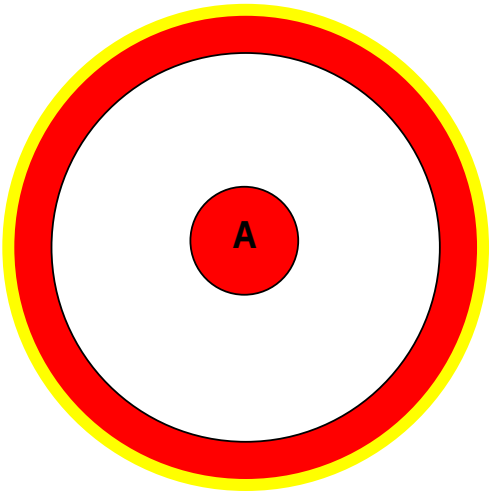
The general rule regarding range selection is that at every reading the Flow Pressure should be at least 5 Pa greater than the corresponding Room/House Pressure. For example, if the Room/House Pressure is 25 Pa, the Flow Pressure should be at 30 or higher.

One slight complication arises: when conducting a Multi-Reading test, your highest reading (i.e. 50 Pa Room/House Pressure) must start with a Flow Pressure that is close to double the Room/House Pressure (i.e. if your first Room/House Pressure reading is at 50 Pa, the corresponding Flow Pressure must be approximately 90 - 100 Pa.). If this does not occur, you will likely find that you "run out" of Flow Pressure near the end of the test, since the Flow Pressure drops at a faster rate than the Room/House Pressure.

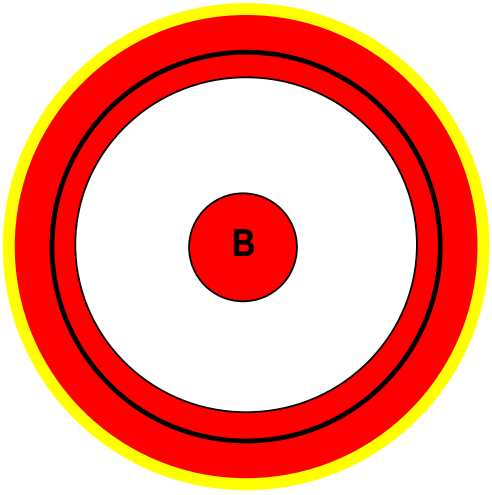
Range Configurations for the Retrotec 2200 Automatic Fan



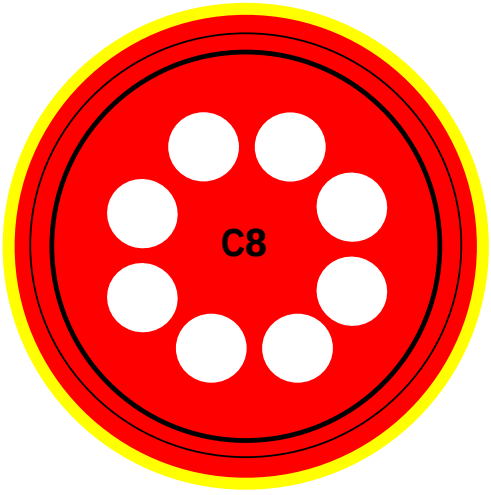
Open Range has no covers over fan inlet



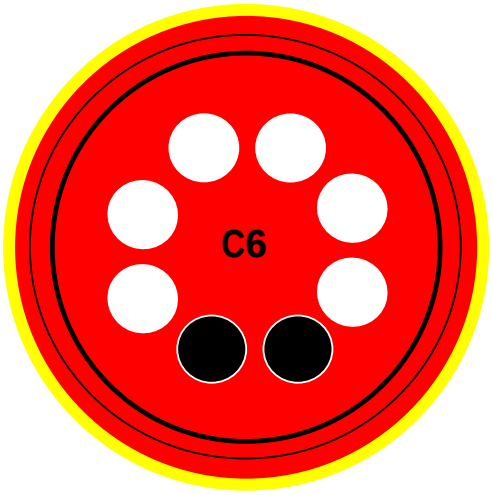
Range A has 1 ring installed



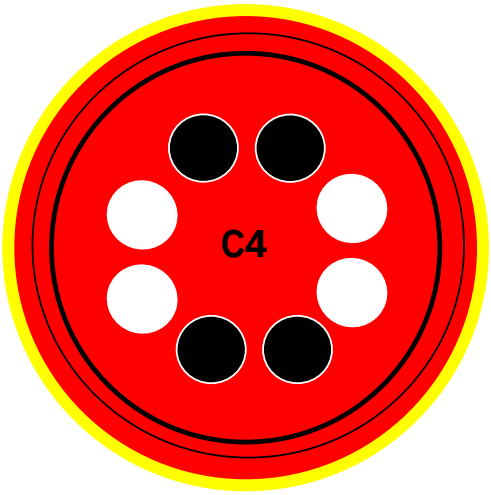
Range B has 2 rings installed



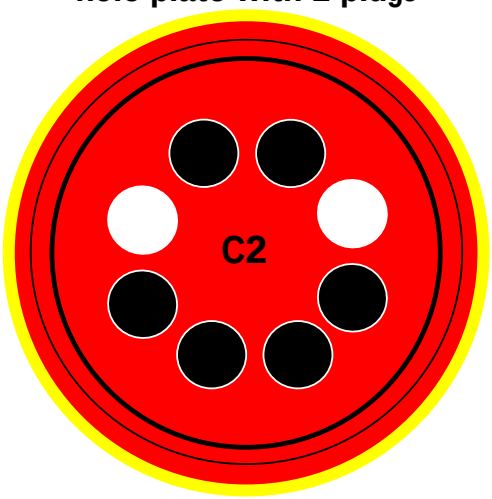
Range C8 has 2 rings installed + 8 hole plate



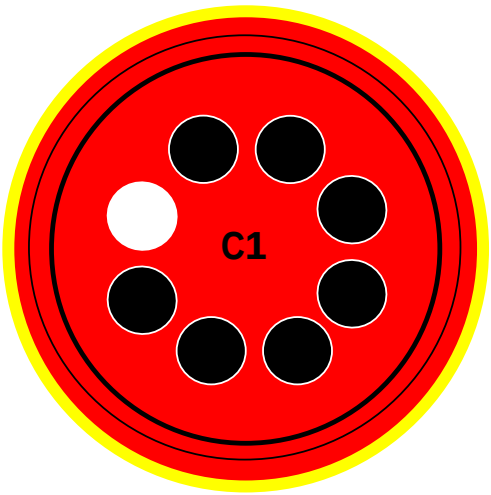
Optional Range available 2007
Range C6 has 2 rings installed + 8 hole plate with 2 plugs



Range C4 has 2 rings installed + 8 hole plate with 4 plugs



Range C2 has 2 rings installed + 8 hole plate with 6 plugs



Range C1 has 2 rings installed + 8 hole plate with 7 plugs

10 Troubleshooting